

AMENDMENTS TO THE CLAIMS

24. (Currently Amended) A paging control method executed by a ~~paging control apparatus~~ radio network controller in a mobile network including a core network, a radio access network, and a mobile communication terminal, wherein the radio access network includes a plurality of base stations, and ~~a the radio network controller, serving as the paging control apparatus, the paging control apparatus~~ the radio network controller including at least two controllers ~~among which controlling of communication between the core network and the base stations is functionally distributed~~, one of the at least two controllers being a first controller processing a paging message transmitted from the core network to the radio access network, and wherein the mobile communication terminal performs communication with at least one of the base stations via a radio interface, the paging control method comprising:

receiving at the first controller in the radio network controller the paging message transmitted from the core network to the radio access network;

judging at the first controller a transmission destination of the paging message by:

determining whether an active signal connection currently exists between the mobile communication terminal and the radio access network or the core network, said active signal connection comprising a dedicated channel between the mobile communication terminal and the radio access network or the core network for signal communications, said determining being executed by referring to signal connection information registered within the first controller using an identifier assigned to the mobile communication terminal by the radio access network,

when the active signal connection is determined to currently exist, judging the transmission destination to be one of the at least two controllers in the radio network controller that controls the signal connection, and

when the active signal connection is not determined to currently exist, judging the transmission destination to be one of the at least two controllers that controls a predetermined base station of the base stations or one of the base stations that is identified from the paging message; and

transmitting from the first controller the paging message to the transmission destination,

wherein a function of the radio network controller of controlling communications between the core network and the base stations is distributed among the at least two controllers in the radio network controller.

25. (Canceled)

26. (Previously Presented) The paging control method according to claim 24, wherein the paging message is transmitted by multicast transmission.

27. (Canceled)

28. (Currently Amended) A ~~paging control apparatus~~ radio network controller in a mobile network that includes a core network, a radio access network, and a mobile communication terminal configured to perform communication with a base station via a radio interface, wherein the radio access network includes a plurality of base stations and ~~a~~ the radio network controller, ~~serving as the paging control apparatus, the paging control apparatus~~ radio network controller comprising:

at least two controllers among which controlling of communication between the core network and the base stations is functionally distributed, one of the at least two controllers being a first controller configured to:

receive a paging message transmitted from the core network to the radio access network,

judge a transmission destination of the paging message by:

determining whether an active signal connection currently exists between the mobile communication terminal and the radio access network or the core network, said active signal connection comprising a dedicated channel between the mobile communication terminal and the radio access network or the core network for signal communications, said determining being executed by referring to signal connection information registered within the first controller using an identifier assigned to the mobile communication terminal by the radio access network;

when the active signal connection is determined to currently exist, judging the transmission destination to be one of the at least two controllers that controls the signal connection; and

when the active signal connection is not determined to currently exist, judging the transmission destination to be one of the at least two controllers that controls a predetermined base station of the base stations or one of the base stations that is identified from the paging message; and

transmit the paging message to the transmission destination.

29. (Currently Amended) The ~~paging control apparatus~~ radio network controller according to claim 28, further comprising:

a connection information registering unit configured to register signal connection information including a first indication of whether a first active connection between the mobile communication terminal and the radio access network currently exists, a second indication of whether a second active connection between the mobile communication terminal and the core network currently exists, and a specified controller configured to control the first active connection or the second active connection, wherein the first controller refers to the signal connection information to judge the transmission destination to the specified controller.

30. (Currently Amended) The ~~paging control apparatus~~ radio network controller according to claim 29, wherein

the signal connection information includes

first connection information including the first active connection, a first identifier that temporarily identifies the mobile communication terminal, and the specified controller configured to control the first active connection, and

second connection information that associates the first identifier with a second identifier having a number form peculiar to the mobile communication terminal, if the mobile communication terminal sets the second active connection, and

upon receiving a paging message including the second identifier from the core network,

the first controller refers to the signal connection information to judge the transmission destination.

31. (Currently Amended) The ~~paging control apparatus~~ radio network controller according to claim 30, wherein

the second connection information further includes a third identifier having a number form peculiar to the core network and associated with the first identifier and the second identifier, when the core network notifies the mobile communication terminal of the third identifier, and

upon receiving a paging message including the third identifier from the core network, the first controller refers to the signal connection information to judge the transmission destination.

32. (Canceled)

33. (Currently Amended) The ~~paging control apparatus~~ radio network controller according to claim 29, wherein

when the transmission destination is judged to include multiple controllers or base stations, the first controller copies the paging message, and transmits the copied paging message to all the multiple controllers or base stations.

34. (Currently Amended) The ~~paging control apparatus~~ radio network controller according to claim 29, wherein the paging message is transmitted by multicast transmission.

35. (Currently Amended) The ~~paging control apparatus~~ radio network controller according to claim 29, wherein

the one of the at least two controllers judged as the transmission destination includes
a second controller that controls a base station within a call area of the mobile communication terminal decided by the core network, and

a third controller that controls data transfer to the base station controlled by the

second controller, and

upon receiving the paging message from the core network, the first controller transmits the paging message to the second controller or the third controller using a multicast address of the second controller or the third controller associated with the call area, the multicast address having been registered in advance.

36. (Currently Amended) A radio access network comprising:

a plurality of base stations configured to perform communication with a mobile communication terminal via a radio interface; and

a radio network controller that is connected to a core network and that includes at least two controllers among which controlling of communication between the core network and the base stations is functionally distributed, wherein

the at least two controllers includes a first controller configured to receive a paging message transmitted from the core network to the radio access network,

judge a transmission destination of the paging message by:

determining whether an active signal connection currently exists between the mobile communication terminal and the radio access network or the core network, said active signal connection comprising a dedicated channel between the mobile communication terminal and the radio access network or the core network for signal communications, said determining being executed by referring to signal connection information registered within the first controller using an identifier assigned to the mobile communication terminal by the radio access network;

when the active signal connection is determined to currently exist, judging the transmission destination to be one of the at least two controllers that controls the signal connection; and

when the active signal connection is not determined to currently exist, judging the transmission destination to be one of the at least two controllers that controls a predetermined base station of the base stations or one of the base stations that is identified from the paging message, and

transmit the paging message to the transmission destination.

37. (Previously Presented) The radio access network according to claim 36, wherein the first controller further includes a connection information registering unit configured to register signal connection information including a first indication of whether a first active connection between the mobile communication terminal and the radio access network currently exists, a second indication of whether a second active connection between the mobile communication terminal and the core network currently exists, and a specified controller configured to control the first active connection or the second active connection, and the first controller refers to the signal connection information to judge the transmission destination to be the specified controller.

38. (Previously Presented) The radio access network according to claim 37, wherein the signal connection information includes first connection information including the first active connection, a first identifier that temporarily identifies the mobile communication terminal, and the specified controller configured to control the first active connection, and second connection information that associates the first identifier with a second identifier having a number form peculiar to the mobile communication terminal, if the mobile communication terminal sets the second active connection, and upon receiving a paging message including the second identifier from the core network, the first controller refers to the signal connection information to judge the transmission destination.

39. (Previously Presented) The radio access network according to claim 38, wherein the second connection information further includes a third identifier having a number form peculiar to the core network and associated with the first identifier and the second identifier, when the core network notifies the mobile communication terminal of the third identifier, and

upon receiving a paging message including the third identifier from the core network, the first controller refers to judge the transmission destination.

40. (Canceled)

41. (Previously Presented) The radio access network according to claim 37, wherein the one of the at least two controllers judged to be the transmission destination includes multiple controllers, and

the first controller copies the paging message, and transmits the copied paging message to all the multiple controllers or all base stations controlled by the multiple controllers.

42. (Previously Presented) The radio access network according to claim 37, wherein the paging message is transmitted by multicast transmission.

43. (Previously Presented) The radio access network according to claim 37, wherein the one of the at least two controllers judged as the transmission destination includes a second controller that controls a base station within a call area of the mobile communication terminal decided by the core network, and

a third controller that controls data transfer to the base station controlled by the second controller, and

upon receiving the paging message from the core network, the first controller transmits the paging message to the second controller or the third controller using a multicast address of the second controller or the third controller associated with the call area, the multicast address having been registered in advance.

44. (Previously Presented) The radio access network according to claim 43, wherein the multicast address of the third controller associated with the second controller is registered in advance, and

upon receiving the paging message from the first controller, the second controller

transmits the paging message to the third controller using the multicast address.

45. (Previously Presented) The radio access network according to claim 44, wherein a multicast address including all base stations controlled by the third controller is registered in advance, and

upon receiving the paging message from the second controller, the third controller transmits the paging message to all the base stations controlled by the third controller using the multicast address.

46. (Previously Presented) The radio access network according to claim 43, wherein a multicast address including all base stations controlled by the third controller is registered in advance, and

upon receiving the paging message from the second controller, the third controller transmits the paging message to all the base stations controlled by the third controller using the multicast address.